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Leaving No One Behind: Personal, Structural and Cultural Hindrances affecting Women Participation in Scientific Research in Academic Context

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ABSTRACT- The main idea of this descriptive study focused on identifying the hindrances of participation in scientific research that stand in the way of female faculty members from their point of view. This approach corresponds and coincides with the growing trends, nationally and globally, that aimed at women empowerment and enhancing their role in all sectors and at different levels to promote their participation in national development. The key question of the research was: "What are the major hindrances towards scientific research activities as perceived by female faculty members at Prince Sattam Bin Abdulaziz University (PSAU) in Saudi". The study was based on a survey of 270 female teaching staff of all the PSAU colleges (11 in five regions located in the south of Riyadh (the capital city of Saudi Arabia). Study findings uncovered the personal, structural and culture hindrances that experienced by female faculty members and influenced their level of participation in scientific research activities, and revealed a crucial need for providing all possible efforts that empower women to perform vital roles in scientific research activities by enacting laws and regulations that support women and suit their nature, requalifying them according to the requirements and nature of the work, and create the right environment that help them perform their multiple roles. Commitment to women empowerment in participating in scientific research highly recommended to be adopted at the topmost political and institutional level. Scientific research in universities requires finding a suitable working environment within the institutions of higher education itself. They should be governed by research culture and values based on flexibility, fairness and objectivity on the one hand and the need for infrastructure,capabilities, necessary material and manpower qualified on the other hand to enable female researchers for carrying out their duties fully towards their nation development.

Keywords: Woman participation, research hindrances, university, Leaving No One Behind.

I. INTRODUCTION

It is well known that universities are the most important institutions in producing scientific research, and leaders depend on them largely in achieving the nation's strategic goals. Even those universities, which tend to focus more on teaching and learning process do not abandon their responsibilities towards scientific research, this issimply due to the fact that according to global tendencies of quality, the improvement of university systems, programs and faculty members requires attention towards the production of scientific research.

While faculty member in any university is primarily responsible for the production of scientific research, responsibility vests with the universities to provide appropriate research environment and to overcome the barriers that may stand in the way of researchers. In addition to this, several important factors need to be taken into consideration for promoting women's participation in scientific research in new established Saudi universities:

Firstly: Research is the Driving Force for Development

Research is seen as one of the most basic components of the development and construction of civilization in modern societies, it is based in solving their problems and improving the way of life and a wiser strategic choice in planning to their future. What's more is the fact that the development which is not built on the scientific grounds backed and evolution; remain ultimately a fragile development lacking any strategic basis.

Secondly: SaudiArabia's Competitiveness and University Rankings in Vision 2030

Vision 2030 aims to increase KSA's competitiveness and university rankings and ensured that R&D is specifically critical in helping Saudi Arabia achieve its long term goals as two main components of the Global Competitiveness Index are related to R&D and KSA may improve these only by rising its R&D competitiveness. Hence, one of the Kingdom's goals as stated in the Vision 2030 is to be among the top 10

countries in Global Competitiveness Index by 2030, increasing from its rank of 25th in 2015. According (Ministry of Education, 2021).This requires the relevant authorities to make all possible efforts and to invest various human and material resources to achieve the targeted achievements.

Thirdly: Role of the University in Encouraging Individual Growth

Universities are important social institutions that have very strong interactions with other surrounding social systems. The Saudi planners believed that the universities have roles and responsibilities to play .One of them was the large responsibility sourced from the close relationship connecting the overall development plans and the availability and preparation of trained and qualified individuals of different levels to meet the community multiple needs.

This perspective was quite clear in the Human Capital Development Vision Realization Program aims to improve the outputs of the education system at all stages and provide training to reach the international levels via education and training programs corresponding with the requirements of modern times and its development needs in the local and global labor market (HUMAN CAPITAL DEVELOPMENT PROGRAM, 2021). Thus, universities are important social institutions that have very strong interactions with other surrounding social systems and have roles and responsibilities to play and contributes in building a knowledge-based society and meeting the requirements of economic and social development.

Fourthly: Untapped Potential

Numerous researches and statistics indicate that women continue to lag behind men in different aspects of life with education and research as no exceptions. This applies to all the developed countries and the less developed countries.UNESCO statistics December (2012) shows that women generally represent a minority in terms of researchers in the world. This is shown clearly in the Arab countries where female researchers constitute low ratio, further this was clearer in the case of Saudi Arabia where they account according to 2009's statistics only (1.4%) (see: http://www.uis.unesco.org/FactSheets/Documents/sti-women-in-science-en.pdf). Women represent half of the society and when they go to work to provide services to their community, they originally play key roles towards their family and both are affected by each other. Consequently, there is an urgent need to reconcile these roles because any gap in these roles will leave its impact on community development in the fields of economic, social, cultural and health.

II. BACKGROUND OF THESTUDY

The history of higher education in the Kingdom of Saudi Arabia is relatively new yet,rapidlydeveloping. Twelve (12) new public universities were established in the last decade reaching total number of public universities to twenty five (25). Private higher education which started in (2001), reached (8) universities and (40) colleges (Ministry of Higher Education - Agency of the Ministry of Planning and Information, 2012).

Although higher education was not available for females until 1961, female education in particular, has received significant attention during the last fifty years leading to unparalleledgrowth in different aspects of academic life (Saleh, 1986, Al-Tamimi, 2002).

The latest available statistics in Higher Education in 2014 shows that the number of female students enrolled in bachelor stage increased to reach (662,375) and (28,565) in post-graduate stage.The statistics shows that the number of women teaching staff has grown from (461) of the total teaching staff in 1976 to become (29,889) in 2014 (Ministry of Higher Education, 2014).The most important step was the establishment of the University of Princess Nora Bint Abdul-Rahman University for Girls in October 2008 with a capacity of (40,000) female student, and a budget of (5.3 billion dollars).

To sum up, the tremendous progress and rapid advancement in Saudi higher education for females can be substantiated by the phenomenal increase in female student population, female teaching staff, establishment of new institutions, building of new campuses, expansion of the existing ones, and the huge financial investment.

III. OBJECTIVE OF THE STUDY

The purpose of the current study was to provide a clear vision for decision-makers, researchers and those interested in the issues of women's participation in social institutions in general, and in higher education in particular in order to create an enabling environment toenhance the role of women in society through the study of reality to reveal the most important hindrances that may affect the upgrading of women's participation in scientific research in higher education institutions specifically in newly established universities.

Therefore, the primary purpose of this exploratory study was to identify the primary hindrances facing scientific research activities as perceived by female faculty members atPSAU, and ways to overcome them.

It is believed that a description of these issues will assist policy makers in developing the university environment to be better equipped to meet female researchers' needs and would contribute to providing a set of proposals that could improve the research environment for female faculty members in all similar newly established universities.

In order to fill this gap this study addresses two main research questions:

RQ1. What are the major hindrances towards scientific research activities as perceived by female faculty members at Prince Sattam Bin Abdulaziz University (PSAU) in Saudi?

To answer the first question it is important to address the four sub questions:

a) What are the most important Personal hindrances faced by female faculty members at PSAU as they conduct scientific research activities?

b) What are the most important legal and regulatory hindrances faced by female faculty members at PSAU as they conduct scientific research activities?

c) What are the most important physical and financial hindrances faced by female faculty members at PSAU as they conduct scientific research activities?

d) What are the most important research culture hindrances faced by female faculty members at PSAU as they conduct scientific research activities?

RQ2.How do location of the college, academic degree and field of study make difference in terms of quality and quantity of scientific research of the female faculty?

IV. Literature Review

Analytical glance to the subject of the current study reveals the diversity and multiplicity of its dimensions. Therefore, the research literature here contains a mix of the efforts of researchers including those interested on women participation in development, scientific research, university roles at local, regional and global levels.

The most significant hindrances in Farra's study (2004) were those related to university's: physical hindrances such as :lack of equipped libraries with modern information technology, financial hindrances like the lack of incentives, non allocation of budget for scientific research, hindrances related to poor university management practices such as over-loaded administrative duties that reduce the time allocated for research, and lack of appropriate offices for faculty members. However, the study showed that the less impeding hindrances were those related to researchers themselves such as the lack of research skills and being busy with different issues outside the university.

By reviewing the relevant literature, Li and others (2008) examined universities' roles in building national research capacity. In the last two decades, governments tended to evaluate the research performance of their universities focusing on the requirement of producing research as an increasingly important criterion for assessing an academic's overall performance. The research quality assurance policies were implemented in universities and have produced considerable impacts on both higher education institutions and academics. Research was supported by managerial efforts, and incentive systems have been established to reward research.

Alsrabi and Amayreh (2008) aimed to detect hindrances to scientific research with faculty members at Isra University in Jordan. The study revealed that (79.54 %) suffer from problems that hinder their contribution in scientific research. It showed that there are statistically significant differences according to gender in favor of females, and field of study for the favor of Humanities, while there were no differences according to the variable of experience and qualification. The study proposed to support libraries with updated specialized scientific periodicals, encourage participation in conferences and communicate with the relevant sectors, increase incentives and rewards allocated to support scientific research and encourage joint scientific research.

The research of Al-Sharmani (2008) uncovered the fact that the faculty members in applied science colleges at University of Sanaa in Yemen, faced hindrances related to the five domains (legislative and administrative, infrastructure, spending and its funding sources, hindrances related to faculty members, climate of scientific research) to varying degrees. The largerhindrances were the expenditure on scientific research and sources of financing. Then hindrances related to legislative and administrative, infrastructure, climate of scientific researchcame respectively. Moreover, thesmaller hindrances were those related to the faculty members themselves.

The study of Alabdullatif(2008) detectshindrances faced by scientific research female faculty members at both King Saud University and Imam Muhammad bin Saud Islamic University in Riyadh. The study

findings emphasize they suffered from the large teaching load and the large number of students that consumes a lot of energy and time along with their involvement in several committees. This is followed by the hindrances related to the length of the arbitration research, shortage of up to date new references, books, journals and periodical journals in their university libraries. Genuine connection between national and international information centers are almost non-existent, computers terminals and networks are very few in the two university libraries with limited opening hours, the shortage of laboratories in their universities, lack of the awareness of the importance of scientific researches and procedures of publishing their academic scientific research are very slow, difficult and too complicated.

Mujaydil and Shamas (2010) classified hindrances facing faculty members in the Education College in Salalah to physical barriers, administrative hindrances and personal hindrances. Results showed approval of a majority of the faculty members (60%) on all items of the questionnaire withno statistically significant differences between males and females. Majorityof therespondentsrevealed that they mostlyfacedadministrative hindrances,followedby physical barriers and personal hindrances. The results also showed that facultymembers with less experience suffer from barriers of scientific research more than their colleagues with experience (five years or more).

Al-Soina (2011) studied hindrances to research among faculty members at Al-Imam Muhammad Ibn Saud Islamic University using the descriptive analytical method. A survey was used to collect data from 232 faculty members. The result of the study shows that research at Al-Imam University faces administrativehindrances; personalhindrances; and financial impediments, and there were no statistically significant differences based on sexand academic rank with regard to the administrative,academic, financial, personalhindrances.

Karimian and others (2012) discussed hindrances to research by faculty members in Medical Sciences at Shiraz University. Six types of hindrances were considered to affect research activities by most of the respondents, with 90% identifying financial hindrances. There were significant differences by gender, scientific rank and field of study. Hindrances were higher for women more than men were and faculty members who had more executive responsibilities identified fewer hindrances than other respondents did.

The Council of Canadian Academies examined the factors that influence the career trajectory and statistical profile of women researchers in Canadian universities (2012). It was explained that women's progress in Canadian universities is uneven by discipline and rank. The Canadian report discussed the fact that in spite of decades of under-representation of women on campus in Canada there is an improvement in equality between both genders in terms of students enrolled at the university.Findings showed that there were combination of practices and policies that can be applied to meet objectives, bring about real change, and lead to increase the competitiveness of individual women, such as scholarships, outreach opportunities and targeted grants. There were university initiatives that aim to create more flexible and family-friendly environments, such as part-time track positions, and after-hours childcarecenters, which provide quality care. In term of government policies, systemic issues were remedied such as legislated quotas, employment equity policies, and extending grants to accommodate parental leave.

V. METHODS

Data Collection

The study sought to explore key issues of female teaching staff regarding their participation in research activities, with a deliberate focus on their perspectives; being a vital way to consider improvements to policy and practice that might enhance their opportunities. Therefore, the main data collection instrument for the current research was a questionnaire written in Arabic (see Appendix for English language version), and comprisedof two main sections: the first to capture the participants background information includinglocation of their colleges, academic degree, fields of study, Nationality and social status, and the secondto cover the main hindrances that might be faced by the female faculty members as they conduct scientific research activities whichwasmeasured using a 3-point Likertscale, range by 1 = strongly disagree and 3 = strongly agree.

Participants

203 female faculty members of all the PSAU colleges (11 in five regions located in the south of Riyadh (the capital city of Saudi Arabia), were invited to fill copies of questionnaire. Out of 203 copies, 176 (87%) responses were returned, and 170 (84%) responses were chosen as valid data for analysis.

Data Analysis

The demographic profile of the respondents includedfields of study, academic degree, nationality, and**s**ocial status. Table 1 summarized the descriptive analyses results for the demographic variables of the current study.

Table 1: *Profiles of Respondents*

Category	Details						
Location of Colleges	Alkharj	W.Aldwar	Alhotah	Aldlam	Alaflaj	Alsulyl	Totel
N	60	45	26	16	14	9	170
%	35.3	26.5	15.3	9.4	8.2	5.3	100%
Fields of Study	humanities	Natural Sc.	Medical Sc.	Eng. & IT	Totel		
N	78	52	30	10	170		
%	45.9	30.6	17.6	5.9	100%		
Academic Degree	Assistant	associate	Prof	Totel			
N	159	7	4	170			
%	93.5	4.1	2.4	100%			
Nationality	Saudi	Non Saudi	Totel				
N	10	160	170				
%	5.9	94.1	100%				
Social status	Married	NonMarried	Totel				
N	154	16	170				
%	90.6	9.4	100%				

In terms of Location of Colleges, the largest group was from Alkharj35.3% (n=60out of the 170 respondents) while the smallest one was Alsulyl (5.3, n=9), while for the fields of study, most of the respondents were from humanities colleges (45.9%, n=78) and the minority group was from the colleges of information technology (5.9, n=10).In terms of academic degree, the largest category was 'assistant" (93.5%, n=159), the "professor' was the smallest with (2.4, n=4).The information collected in this study also shows that the majorityof the respondentswere non-Saudis representing94.1%(n=160) compared to a few Saudis amounted to 5.9% (n-10) while in terms of social status most of the respondents were married representing 91% (n=154) compared to 95 (N=16) non married.

Reliability and Validity:

To calculate the validity and reliability of the questionnaire, exploratory sample consisting of (30) individuals was selected. the researcher used the method of Cronbach's alpha, and account discrimination coefficients for each question of the questionnaire .Reliability coefficient was also calculated by the method of split –half method .

Reliability coefficient = 2r / (1 + r) where: (r) is the Pearson correlation coefficient between the answers to the odd-numbered questions and answers to the questions even-numbered. It was observed that the Validity and reliability coefficients for each domain and full questionnaire was greater than (50%), indicating that the questionnaire combined Validity and reliability toachieve the purposes of the study which makes statistical analysis proper and acceptable.

Table (2*)* *the discrimination coefficients for phrases of all domains*

Personal		Legal and regulatory		Physical and financial		Culture of scientific research	
No of phrase	Discrimination coefficients	No of phrase	Discrimination coefficients	No of phrase	Discrimination coefficients	No of phrase	Discrimination coefficients
1	0.5117	14	0.5243	31	0.6029	42	0.4714
2	0.5941	15	0.5573	32	0.6546	43	0.4399
3	0.4376	16	0.4661	33	0.6245	44	0.5695
4	0.4774	17	0.5200	34	0.6969	45	0.7014
5	0.3448	18	0.5391	35	0.6489	46	0.5862

6	0.5161	19	0.6490	36	0.5878	47	0.5829
7	0.5500	20	0.5179	37	0.3051	48	0.6428
8	0.2967	21	0.4664	38	0.5868	49	0.6901
9	0.5122	22	0.5843	39	0.4686	-	-
10	0.5431	23	0.6741	40	0.5148	-	-
11	0.5238	24	0.5480	41	0.5186	-	-
12	0.5306	25	0.5962	-	-	-	-
13	0.3369	26	0.6044	-	-	-	-
-	-	27	0.6522	-	-	-	-
-	-	28	0.5047	-	-	-	-
-	-	29	0.5645	-	-	-	-
-	-	30	0.6068	-	-	-	-

Source: prepared by the researcher of the study data field

The discrimination coefficients for all the questions by the various domains were calculated:
We note that for all discrimination coefficients phrases of the all domains and more than 20% and this means that no statements of the questionnaire need to be deleted.

Account Validity Coefficient Correlative Internal to the Questionnaire:
To find the internal consistency of the paragraphs,correlationand coefficients between the rate of each area and the overall rate of paragraphs was created and results are shown in the following Table (3):

Table (3)*the correlations coefficients between the rates of the domains and the overall rate to the questionnaire*:

	A1	A2	A3	A4	T
A1	1.000				
A2	0.321**	1.000			
A3	0.446**	0.718**	1.000		
A4	0.364**	0.628**	0.609**	1.000	
T	0.593**	0.883**	0.798**	0.815**	1.000

Note (**) means that the correlation coefficient statistically significant at the 0.01 level of significance
Where A1, A2, A3 and A4 are rate four domainsdiscussed sequentially and T represents the overall rate of the questionnaire. From Table (3) we note that all correlation coefficients are statistically significant at the 0.01 level of significance, and this means that all domains linked to the questionnaire confirmsthe sincerity of the internal questionnaire.

VI. RESULTS AND DISCUSSION

Current study attempted to identify the views of respondents about the extent of the presence of hindrances adversely affecting the availability of a supportive environment for scientific research at PSAU, through the analysis data related to the sample responses on the four themes of the questionnaire: (Personal hindrances, Legal and regulatory hindrances, Physical and financial hindrances and those related to culture of scientific research). The results revealed the existence of differences between responses duplicates for the sample to the various statements of the questionnaire.
To identify the significance of these differences and the order of phrases according to their importance, the mediator chi-square test was used as shown.
To validate the questionnaire in total for all phrases, and survey phrases (49), each of them has (170) replies, this means that the number of responses in overall study sample on all questionnaire phrases would be (8330) answers, which can be summarized in Table 4 below:

Table (4):*Summary of questionnaire replies*

respose	N	%
Agree	4349	52.2%
Not sure	2012	24.2%
Not agree	1969	23.6%
Totel	8330	100%

Table (4) shows that the study sample included (52.2%) agree at phrases questionnaire, and (24.2%) not sure, and (23.6%) do not agree, and the median value for the whole questionnaire items was (3).The value of chi-square calculated the significance of differences between the number of approvers. neutrals and non- approvers, reached (1335.87), degree of freedom (2), and as the value of probability (0.000) is

less than the significance level (1%), and depending on the what is stated in the table above, this indicates a statistically significant difference, and at the level (1%) between the answers of respondents in favor of approvers to the entire phrases survey.
Consequently, it is concluded that the faculty members are suffering from the hindrances of scientific research listed in the questionnaire

The First Theme: Personal Hindrances
To identify the significance of these differences and the order of phrases according to their importancethe mediator chi-square test was used as shown in Table5:

Table (5):*Chi-square test results for the significance of differences between the answers and the order of phrases according to their importance and themediatoron each statement in the theme of Personal Hindrances*

N	Statements	Chi-square value	Sort by Significance	D. F	P-value	Median	Interpretation
1.	Lack of confidence in her research abilities	188.34**	1	2	0.000	1	not agree
2.	The weak of researcher's skills in scientific research	139.99**	6	2	0.000	1	not agree
3.	The researcher is subjected to psychological pressure due to the accumulation of her responsibilities	73.28**	21	2	0.000	3	agree
4.	Researcher's lack of motivation and ambition	64.74**	25	2	0.000	1	not agree
5.	Researcher's lack of the skills required to use the different library information. sources (receptacles of information)	62.84**	26	2	0.000	1	not agree
6.	Most researchers lack the skills necessary to use modern technical equipment	56.62**	27	2	0.000	1	not agree
7.	Lack of skills to use other languages	54.79**	28	2	0.000	1	not agree
8.	Facing difficulty in mobility for research purposes.	47.66**	30	2	0.000	3	agree
9.	Most researchers lack the skills needed for an effective use of search engines in electronic sources	46.04**	31	2	0.000	1	not agree
10.	Poor personal communication with research centers in other universities	18.26**	39	2	0.000	3	agree
11.	Researcher's impression that research is merely for promotion purposes	13.42**	42	2	0.001	1	not agree
12.	The large number of family and social obligations to the faculty member	2.27	47	2	0.321	1	not agree
13.	Disappointment due to the lack of interest in making use of the scientific research results	0.294	49	2	0.863	2	not sure
The entire statements of the theme(Personal hindrances)		223.22**	-	2	0.000	1	not agree

(**)There were statistically significant differences between the responses at the level of 0.01 or less
(*) There were statistically significant differences between the answers at the 0.05 level or less

Table 5 can be interpreted as follows:
- There were statistically significant differences at the level (1%) of the phrases first theme as a whole for the benefit of the answer corresponding to the value of the mediator response (1), which means the response does not agree with the fact that respondents were facing many personal hindrances.
To validate the first theme (Personal Hindrances) in total for all its phrases, which was (13), and (170) replies.means that the number of responses of overall study sample on all the themephrases would be (2210) answers.It is observed that the study sample included (48.3%) not agree phrases of this dimension (personal obstacals), and (25%) not sure, and (26.7 %) agree, and the median value for the whole questionnaire items was (1). The value of chi-square calculated the significance of differences

between the number of approvers, neutrals and non- approvers, reached (223.22), degree of freedom (2), and as the value of probability (0.000) is less than the significance level (1%), and depending on what is stated in the table above, this indicates a statistically significant difference, and at the level (1%) between the answers of respondents in favor of non-approvers to the phrases this dimension.
Consequently, it is concluded that personal hindrances listed on the questionnaire did not represent real difficulties faced by the faculty members in conducting scientific research.

The Second Theme: Legal and Regulatory Hindrances
To identify the significance of the differences of the second theme related to legal and regulatory hindrances, and the order of phrases according to their importance and the mediator, chi-square test was used as shown in Table 6:

Table (6):*Chi-square test results for the significance of differences between the answers and the order of phrases according to their importance and the mediator on each statement in the theme of Legal and Regulatory Hindrances*

N	Statements	Chi-square value	Sort by Significance	D.F	P-value	Median	Interpretation
1.	Little opportunity to attend conferences and seminars	179.38**	1	2	0.000	3	agree
2.	Daily administrative responsibilities take up a major part of the member's time	142.39**	2	2	0.000	3	agree
3.	The university provides limited opportunity for communication with fellow colleagues outside the university	136.46**	3	2	0.000	3	agree
4.	Complicated regulations concerning the participation in conferences abroad	135.97**	4	2	0.000	3	agree
5.	Evaluating the member's duties focus on teaching load without any consideration to scientific production	133.21**	5	2	0.000	3	agree
6.	Little opportunity for cooperation with other universities and research centers	117.26**	6	2	0.000	3	agree
7.	Research work hours are not included in the faculty members work hours	113.55**	7	2	0.000	3	agree
8.	No cooperation with private sectors institutions	111.26**	8	2	0.000	3	agree
9.	Little opportunity for research skills development	108.37**	9	2	0.000	3	agree
10.	No balance, in the member's accountability, between her role in teaching and her role in scientific research	85.92**	18	2	0.000	3	agree
11.	Shortage in the technical staffs qualified to assist in the field of research	77.55**	10	2	0.000	3	agree
12.	Heavy teaching load	68.13**	11	2	0.000	3	agree
13.	The absence of a declared system of incentives in the field of scientific research	53.87**	12	2	0.000	3	agree
14.	The ambiguity of regulations and executive rules related to scientific research within the university	42.37**	13	2	0.000	3	agree
15.	The university lacks plans and strategies for scientific research	33.93**	14	2	0.000	3	agree
16.	Unclear strategies related to scientific research in the university	33.75**	15	2	0.000	3	agree
17.	Promotion rules of teaching staff do not live up to their ambitions.	14.55**	16	2	0.001	3	agree
	The entire statements of the theme(Legal and Regulatory)	1461**	-	2	0.000	3	agree

(**)There were statistically significant differences between the responses at the level of 0.01 or less
(*) There were statistically significant differences between the answers at the 0.05 level or less

Table 6 can be interpreted as follows:

- There are significant differences between the responses of the sample at the level of significance (1%) in favor of the response corresponding to the median value (3=agree) which means faculty members are dissatisfied with the university policies and procedures with very little scopeto achieve professional growth .
- The results suggest that university did not provide support to strengthen their research activities.
- To validate the first theme (Personal Hindrances) in total for all its phrases, which was (17), and (170)replies, means that the number of responses inoverall study sample on all the themephrases would be (2890) answers, which are summarized below:

The study sample included (66.2%) agree at phrases of the theme, (22.8 %) not sure, and(11.1%) do not agree, and the median value for the whole questionnaire items was (3=agree).The value of chi-square calculated the significance of differences between the number of approvers, neutrals and non- approvers reached (1461), degree of freedom (2), and as the value of probability (0.000) is less than the significance level (1%), and depending on the what is stated in the table above, this indicates a statistically significant difference, and at the level (1%) between the answers of respondents in favor of approvers to the entire dimeension phrases.

Consequently, it is concluded that the faculty members are suffering from the hindrances of scientific research listed in thetheme of legal and regulatoryhindrances.

The ThirdTheme: Physical and Financial Hindrances

To identify the significance of the differences of the third theme (Physical and Financial Hindrances), and the order of phrases according to their importance.the mediator chi-square test was used as shown in Table7:

Table(7):

Chi-square test results for the significance of differences between the answers and the order of phrases according to their importance and the mediator on each statement in the theme of Physical and Financial hindrances

N	Statements	Chi-square value	Sort by Significance	D. F	P-value	Median	Interpretation
1.	lack of required modern equipment and laboratories for research	175.99**	3	2	0.000	3	agree
2.	Limited number of rooms allocated to researchers in the university	162.51**	4	2	0.000	2	not sure
3.	Limited attention in providing specialized scientific periodicals in the university libraries.	130.11**	10	2	0.000	3	agree
4.	The shortage of specialized research centers in the university	115.99**	12	2	0.000	3	agree
5.	Poor maintenance of the university's scientific instruments and laboratories	103.07**	16	2	0.000	3	agree
6.	University's libraries lack of references and new scientific books	102.22**	17	2	0.000	3	agree
7.	The lack of statistics and information centers in the university	75.54**	20	2	0.000	3	agree
8.	The modest yields of the research work compared to its costs	41.17**	33	2	0.000	3	agree
9.	Difficulty to obtain financial support for scientific research within the university	38.62**	34	2	0.000	3	agree
10.	Limited scientific research budget	38.13**	35	2	0.000	3	agree
11.	Limited internet accessibility for the faculty members	28.04**	38	2	0.000	3	agree
The entire statements of (Physical and Financial hindrances) theme		876.87**	-	2	0.000	3	agree

(**)There were statistically significant differences between the responses at the level of 0.01 or less

(*) There were statistically significant differences between the answers at the 0.05 level or less

Table 7 can be interpreted as follows:

- There are significant differences between the responses of the sample at the level of significance (1%) in favor of the response corresponding to the median value (3=agree) which means faculty members dissatisfied with the phiscal inveronment and university materials and financial support.
- The results suggestthat university did not meet their needs and they suferred from lack of modern equipment and laboratoriesfor research, Limited specialized scientific periodicals in the university libraries, shortage of specialized research centers, poor maintenance of the university's scientific instruments and laboratories, lack of references and new scientific books, lack of statistics and information centers in the university, modest yields of the research work compared to its costs, difficulty to obtain financial support for scientific research within the university, limited scientific research budget and imited internet accessibility for the faculty members.

To validate the first theme (Physical and Financial Hindrances) in total for all its phrases, which was (11), and (170)replies, means that the number of responses inoverall study sample on all the themephrases would be (1870) answers.

The study sample included (65.3%) agree, (20.9 %) not sure, and(13.7%) do not agree, and the median value for the whole theme items was (3=agree).The value of chi-square calculated the significance of differences between the number of approvers, neutrals and non- approvers reached (876.87), degree of freedom (2), and as the value of probability (0.000) is less than the significance level (1%), and depending on the what is stated in the table above, this indicates a statistically significant difference, and at the level (1%) between the answers of respondents in favor of approvers to the phrases of this theme (Physical and Financial Hindrances).

Consequently, it is concluded that the faculty members are suffering from the hindrances of scientific research listed in the theme of Physical and Financial Hindrances.

The Fourth Theme: Research Culture

To identify the significance of differences between the answers and the order of phrases according to their importance and the mediator chi-square test was used as shown in Table8:

Table (8):*Chi-square test results for the significance of differences between the answers and the order of phrases according to their importance and the mediator on each statement in the theme of Research Culture*

N	Statements	Chi-square value	Sort by Significance	D. F	P-value	Median	Interpretation
1.	The absence of Attention for scientific seminars within departments	68.55**	22	2	0.000	3	Agree
2.	Scientific research is not seen as a strategy for institutions in solving the problems they face	65.69**	24	2	0.000	3	Agree
3.	The confidentiality of official statistics.	17.45**	40	2	0.000	2	not sure
4.	The negative perception for collective research work on the institutional level.	12.44**	43	2	0.002	2	not sure
5.	lack awareness of the importance and role of scientific research in society development	7.50*	44	2	0.024	2	not sure
6.	lack of awareness about the importance of forming research teams	6.44*	45	2	0.040	3	Agree
7.	Misconceptions among the research respondents about scientific research	2.91	46	2	0.234	2	not sure
8.	Some important issues are avoided for "safety" reasons	2.13	48	2	0.345	3	Agree
The entire statements of (Research Culture) theme		104.53**	-	2	0.000	3	Agree

(**)There were statistically significant differences between the responses at the level of 0.01 or less

(*) There were statistically significant differences between the answers at the 0.05 level or less

Table 8 can be interpreted as follows:

There are significant differences at the level (1%) for phrases of the fourth theme (Research Culture) as a whole for the benefit of the answer corresponding to the median value (3=agree), which means faculty members in general belivedthat some of the obstaculs they faced were related to culture of research, and

in particuler they saw "the absence of attention for scientific seminars within departments', "scientific research is not seen as a strategy for institutions in solving the problems they face","the lack of awareness about the importance of forming research teams" and "some important issues are avoided for "safety" reasons".

Nevertheless, the respondents were not sure about some items to be real obstacls such as "the confidentiality of official statistics", the negative perception for collective research work on the institutional level, "lack awareness of the importance and role of scientific research in society development, and "misconceptions among the research respondents about scientific research".

To validate the fourth theme (Research Culture) in total for all its phrases, which was (8), and (170)replies, means that the number of responses in overall study sample on all the the theme phrases would be (1360) answers.

The study sample included (45.9%) agree at phrases of the fourth theme, (30.2 %) not sure, and(23.9%) do not agree, and the median value for the whole theme was (3=agree), while the value of chi-square calculated the significance of differences between those approvers, neutrals and non- approvers reached (104,53), with degree of freedom (2).

As shown in Table above, the value of probability was (0.000) which is less than the significance level (1%), there is a statistically significant difference at the level (1%) between the answers of respondents in favor of those who agree with the fourth theme phrases as a whole.

Consequently, in Table 9, it is concludedthat the faculty members arealsosuffering from the hindrances related to the general culture of scientific research.

Thefindings ofthe fourvariablesarecollectivelylisted in Table 9 below:

Table (9):*Overall findings of the four variables*

Personal Hindrances		
Psychological pressure due to accumulation of responsibilities (N=108, 63.5%)	Facing difficulty in mobility for research purposes (N=99, 58.2%)	Poor personal communication with research centers in othe Univs (N=82, 48.2%)
Legal and Regulatory Hindrances		
Little opportunity to attend conferences and seminars (N=138, 81.2%)	Daily administrative responsibilities take up a major part of time (N=129, 75.9%)	Complicated regulations concerning participation in conferences abroad (N=128, 75.3%)
Physical and Financial Hindrances		
lack of required modern equipment and laboratories for research (N=138, 81.2%)	Limited number of rooms allocated to researchers in the university (N=135, 79.4%)	Limited specialized scientific periodicals in the university libraries (N= 126, 74.1%)
Research Culture Hindrances		
The absence of Attention for scientific seminars (N=107, 62.9%)	Scientific research is not seen as a strategy in solving problems (N=106, 62.4%)	The negative perception for collective research work (N=77, 45.3%)

Based on the responses of the respondents it has been understood that majority of the researchers consider Physical and Financial hindrances as the major hindrances followed byLegal and Regulatory hindrances. They consider Personal Hindrances to be a smaller hindrance when compared to the other three hindrances.

The statistical significance of the differences between the responses of the study sample according to the basic data isidentified in Table 10 below:

Table (10): *Test ANOVA Results to identify the statistical significance of the differences between the responses of the study sample according to the basic data*

Themes		Basic Data	F-test value	P-value	Interpretation
First	Personal Hindrances	Academic Degree	1.290	0.278	No significant differences
		Fields of Study	3.421*	0.019	There is significant differences

		Location of Colleges	0.907	0.478	No significant differences
Second	Legal and regulatory	Academic Degree	0.176	0.839	No significant differences
		Fields of Study	1.543	0.205	No significant differences
		Location of Colleges	2.550*	0.030	There is significant differences
Third	Physical and financial	Academic Degree	1.284	0.280	No significant differences
		Fields of Study	1.327	0.267	No significant differences
		Location of Colleges	3.897**	0.002	There is significant differences
Fourth	general culture of scientific research	Academic Degree	0.665	0.516	No significant differences
		Fields of Study	1.763	0.156	No significant differences
		Location of Colleges	2.346*	0.043	There is significant differences
All Themes		Academic Degree	0.798	0.452	No significant differences
		Fields of Study	1.633	0.184	No significant differences
		Location of Colleges	2.880*	0.016	There is significant differences

(**)There were statistically significant differences between the responses at the level of 0.01 or less
(*) There were statistically significant differences between the answers at the 0.05 level or less

The following results are evident from Table (10):

- No statistically significant difference between the responses of the sample at the level of 5% to a variable "academic degree" in each themean in the questionnaire as a whole.
- No statistically significant difference between the responses of the sample to a variable "fields of study"in the second, third and fourth themes and in the questionnaire as a whole while there is a statistically significant differences between the responses of the sample at the level of 5% to a variable "fields of study" in the first theme.
- There is a statistically significant difference between the responses of the sample at the level of 5% to a variable "location of colleges" in the second and fourth themes as well as questionnaire as a whole.
- There is a statistically significant difference between the responses of the sample at the level of 1% to a variable "location of colleges" in the third theme.

Table 11 shows the results of the T.Test to identify statistically significant difference between the responses of the study sample by social status status and nationality:

Table (11):*T.Test Results to identify the statistical significance of the differences between the responses of the study sample according to the basic data*

Themes		Basic Data	T-test value	P-value	Interpretation
First	Personal Hindrances	Social status	-0.246	0.806	No significant differences
		Nationality	0.765	0.445	No significant differences
Second	Legal and regulatory	Social status	-0.300	0.765	No significant differences
		Nationality	0.888	0.376	No significant differences
Third	Physical and financial	Social status	-0.452	0.652	No significant differences
		Nationality	1.212	0.227	No significant differences
Forth	general culture of research	Social status	-1.805	0.072	No significant differences
		Nationality	0.191	0.849	No significant differences
All Themes		Social status	-0.806	0.421	No significant differences
		Nationality	0.924	0.357	No significant differences

(**)There were statistically significant differences between the responses at the level of 0.01 or less
(*) There were statistically significant differences between the answers at the 0.05 level or less

It is clear from Table (11) above that thereareno statistically significant differences between the responses of the two variables "social status" and "nationality" in each theme and in the questionnaire as a whole.
To identify the source of the significant differences between the sampleresponses a "LSD" test was used as shown the following table (12):

Table (12):*Test results "LSD" for the differences between the responses of variable Fields of Study*

Theme	Fields of Study	Mean	humanitieSc.	Natural Sc.	Medical Sc.	Eng. & IT
Personal Hindrances	humanities	1.888	-			
	Natural Sc.	1.743		-		
	Medical Sc.	1.646	**		-	
	Eng. & IT	1.615				-

(**)There were statistically significant differences between the responses at the level of 0.01 or less
(*) There were statistically significant differences between the answers at the 0.05 level or less

Table (12) shows that the significant differences between the responses of the sample at the level of 5% to a variable "fields of study" in the first theme was infavor of the teaching staff members in medical sciences which means that they faced these personal hindrances.
Table (13)shows thatthere is a difference between the views of faculty members, according to the areas where to the variable"location of colleges" as following:

Table (13): *Result of "LSD" test for the differences between the responses of variable Location of Colleges*

Theme	Location of Colleges	Mean	Aldlam	Alkharj	Alhotah	Alaflaj	Alsulyl	W.Aldwasr
Legal and regulatory	Aldlam	2.840	-					
	Alkharj	2.522	**	-				
	Alhotah	2.536	*		-			
	Alaflaj	2.643				-		
	Alsulyl	2.639					-	
	W.Aldwasr	2.443	**					-
Physical and financial	Aldlam	2.880	-					
	Alkharj	2.533	**	-				
	Alhotah	2.397	**		-			
	Alaflaj	2.417	**			-		
	Alsulyl	2.750			**		-	
	W.Aldwasr	2.435	**				*	-
general culture of scientific research	Aldlam	2.500	-					
	Alkharj	2.144	*	-				
	Alhotah	2.236			-			
	Alaflaj	2.027	*			-		
	Alsulyl	2.597		*		*	-	
	W.Aldwasr	2.197	-				*	-

(**)There were statistically significant differences between the responses at the level of 0.01 or less
(*) There were statistically significant differences between the answers at the 0.05 level or less

As shown in Table (13), the source of the significance differences between the views of faculty members according to the variable of "location of colleges" were identified as following:
- In the second theme which related to "legal and regulatory" the significance differences was in favor of those in "Aldlam, Al Aflaj and Allyl", respectively, which means that they faced hindrances related to legal and regulatory,
- In the third "physical and financial", they were in favor of those in "Oldham, Allyl and Al Kharj" respectively,
- In fourth of "general culture of scientific research", they were in favor of those in "Alsulyl, Aldlam and Alhotah" respectively.

The overview of the results derived from the current study shows that its findings agreed with previous studies concerned with the hindrances and challenges faced by female faculty members and impair their participation in the production of scientific research.

VII. CONCLUSIONS AND RECOMMENDATIONS

There is a crucial need for providing all possible efforts that enable women to perform vital roles and contribute to the development and advancement of society by providing three things: first, enacting laws and regulations that support women and suit their nature, second, re qualifying them according to the requirements and nature of the work, and thirdly, create the right environment that help them perform their multiple roles. Commitment to the promotion of women participation in scientific research must be adopted at the topmost political and institutional level. Otherwise, all attempts in improving and changing the reality of research at the national level will tend to be ignored, or result in enormous delays in their implementation. Here the universities role is of paramount importance, given the fact that it has the biggest proportion of researchers than any other institution in Saudi.

Serious scientific research is the basis for the comprehensive development process. It is important to treat the crucial issues of the society and to address them through the development of workable scientific solutions.

Scientific research in universities requires finding a suitable working environment within the institutions of higher education itself. The institutions should be governed by research culture and values based on flexibility, fairness and objectivity on the one hand and the need for infrastructure, capabilities, necessary material and manpower qualified on the other hand, to enable researchers; male and female, from carrying out their duties fully towards their nation development and contribute fully by innovating and generating knowledge.

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